Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1-27. (Cancelled)

28. (New) A method of communicating diagnostic information, the method comprising:

establishing a first communications session on a first communications path between a gateway and an online service;

establishing a second communications session that differs from the first communications session on a second communications path that differs from the first communications path between the gateway and a user device;

determining, at the gateway, diagnostic information associated with a fault in the second communications session;

generating, at the gateway, a message configured to enable communication of the diagnostic information associated with the fault in the second communications session;

communicating, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the second communications session to the online service; and

alleviating, in response to communication of the diagnostic information associated with the fault in the second communications session, the fault in the second communications session without human intervention.

29. (New) The method of claim 28 wherein alleviating the fault in the second communications session without human intervention comprises resolving the fault in the second communications session without human intervention.

30. (New) The method of claim 28 wherein alleviating the fault in the second communications session without human intervention comprises circumventing the fault in the second communications session without human intervention.

31. (New) The method of claim 28 wherein generating the message configured to enable communication of the diagnostic information comprises generating a tunneling protocol message configured to enable communication of the diagnostic information.

32. (New) The method of claim 31 wherein generating the tunneling protocol message configured to enable communication of the diagnostic information comprises customizing a tunneling protocol message configured to enable communication of the diagnostic information.

33. (New) The method of claim 31 wherein generating the tunneling protocol message configured to enable communication of the diagnostic information comprises generating

a diagnostic information message of a tunneling protocol configured to enable communication of the diagnostic information.

34. (New) The method of claim 28 wherein the first communication session comprises a network session and the second communication session comprises an active modem session.

35. (New) A system for communicating diagnostic information, the system comprising:

a first communications path between a gateway and an online service;

a second communications path between the gateway and a user device that differs from the first communications path;

the gateway configured to determine diagnostic information associated with a fault in a communications session on the second communications path;

the gateway configured to generate a message configured to enable communication of the diagnostic information associated with the fault in the communications session on the second communications path;

the gateway configured to communicate to the online service, on the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the communications session on the second communications path; and

the online service configured to alleviate, in response to communication of the diagnostic information associated with the fault in the communications session on the second

communications path, the fault in the communications session on the second communications path without human intervention.

36. (New) The system of claim 35 wherein the gateway comprises an access concentrator.

37. (New) The system of claim 35 wherein the gateway comprises an access multiplexer.

38. (New) The system of claim 35 wherein the online service is further configured to resolve the fault in the communications session on the second communications path without human intervention.

39. (New) The system of claim 35 wherein the online service is further configured to circumvent the fault in the communications session on the second communications path without human intervention.

40. (New) The system of claim 35 wherein the gateway is further configured to generate a tunneling protocol message configured to enable communication of the diagnostic information associated with the fault in the communications session on the second communications path.

41. (New) The system of claim 40, wherein the gateway is further configured to customize a tunneling protocol message configured to enable communication of the diagnostic

information associated with the fault in the communications session on the second communications path.

42. (New) The system of claim 40, wherein the gateway is further configured to generate a diagnostic information message of a tunneling protocol configured to enable communication of the diagnostic information associated with the fault in the communications session on the second communications path.

43. (New) The system of claim 40, wherein the gateway is further configured to generate a layer 2 tunnel protocol message configured to enable communication of the diagnostic information associated with the fault in the communications session on the second communications path.

44. (New) A tangible computer-readable medium having embodied thereon a computer program configured to communicate diagnostic information, the computer program comprising one or more code segments that, when executed, cause a computer to:

establish a first communications session on a first communications path between a gateway and an online service;

establish a second communications session that differs from the first communications session on a second communications path that differs from the first communications path between the gateway and a user device;

determine, at the gateway, diagnostic information associated with a fault in the second communications session;

generate, at the gateway, a message configured to enable communication of the diagnostic information associated with the fault in the second communications session;

communicate, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the second communications session to the online service; and

alleviate, in response to communication of the diagnostic information associated with the fault in the second communications session, the fault in the second communications session without human intervention.

45. (New) The medium of claim 44 wherein the one or more code segments that, when executed, cause the computer to alleviate the fault in the second communications session without human intervention comprise one or more code segments that, when executed, cause the computer to resolve the fault in the second communications session without human intervention.

46. (New) The medium of claim 44 wherein the one or more code segments that, when executed, cause the computer to alleviate the fault in the second communications session without human intervention comprise one or more code segments that, when executed, cause the computer to circumvent the fault in the second communications session without human intervention.

47. (New) The medium of claim 44 wherein the one or more code segments that, when executed, cause the computer to generate the message configured to enable communication of the diagnostic information comprise one or more code segments that, when executed, cause

the computer to generate a tunneling protocol message configured to enable communication of the diagnostic information.

48. (New) The medium of claim 47 wherein the one or more code segments that, when executed, cause the computer to generate the tunneling protocol message configured to enable communication of the diagnostic information comprise one or more code segments that, when executed, cause the computer to customize a tunneling protocol message configured to enable communication of the diagnostic information.

49. (New) The medium of claim 47 wherein the one or more code segments that, when executed, cause the computer to generate the tunneling protocol message configured to enable communication of the diagnostic information comprise one or more code segments that, when executed, cause the computer to generate a diagnostic information message of a tunneling protocol configured to enable communication of the diagnostic information.

50. (New) A method of determining a fault, the method comprising:

establishing a first communications session on a first communications path between a gateway and an online service;

establishing a second communications session that differs from the first communications session on a second communications path that differs from the first communications path between the gateway and a first user device;

establishing a third communications session that differs from the first communications session and the second communications session on a third communications path that differs from

the first communications path and the second communications path between the gateway and a second user device;

determining, at the gateway, diagnostic information associated with a fault in the second communications session;

determining, at the gateway, diagnostic information associated with a fault in the third communications session;

communicating, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the second communications session to the online service;

communicating, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the third communications session to the online service; and

determining, based on the communication of the diagnostic information associated with the fault in the second communications session and the communication of the diagnostic information associated with the fault in the third communications session, a fault in an interface of the gateway.

51. (New) The method of claim 50, wherein the fault in the interface of the gateway comprises a fault in a common communication path shared between the second communications path and the third communications path.

52. (New) The method of claim 50 further comprising:

alleviating, in response to determination of the fault in the interface of the gateway, the fault in the fault in the interface of the gateway.

53. (New) The method of claim 50 further comprising:

generating, at the gateway, a tunneling protocol message configured to enable communication of the diagnostic information associated with the fault in the second communications session and the diagnostic information associated with the fault in the third communications session.

54. (New) A system for determining a fault, the system comprising:

a first communications path between a gateway and an online service;

a second communications path that differs from the first communications path between the gateway and a first user device;

a third communications path that differs from the first communications path and the second communications path between the gateway and a second user device;

the gateway configured to determine diagnostic information associated with a fault in a communications session on the second communications path;

the gateway configured to determine diagnostic information associated with a fault in a communications session on the third communications path;

the gateway configured to communicate to the online service, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the communications session on the second communications path;

the gateway configured to communicate to the online service, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the communications session on the third communications path; and

the online service configured to determine, based on the communication of the diagnostic information associated with the fault in the communications session on the second communications path and the communication of the diagnostic information associated with the fault in the communications session on the third communications path, a fault in an interface of the gateway.

55. (New) A tangible computer-readable medium having embodied thereon a computer program configured to determine a fault, the computer program comprising one or more code segments that, when executed, cause a computer to:

establish a first communications session on a first communications path between a gateway and an online service;

establish a second communications session that differs from the first communications session on a second communications path that differs from the first communications path between the gateway and a first user device;

establish a third communications session that differs from the first communications session and the second communications session on a third communications path that differs from the first communications path and the second communications path between the gateway and a second user device;

determine, at the gateway, diagnostic information associated with a fault in the second communications session;

determine, at the gateway, diagnostic information associated with a fault in the third communications session;

communicate, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the second communications session to the online service;

communicate, in the first communications path between the gateway and the online service, the diagnostic information associated with the fault in the third communications session to the online service; and

determine, based on the communication of the diagnostic information associated with the fault in the second communications session and the communication of the diagnostic information associated with the fault in the third communications session, a fault in an interface of the gateway.

56. (New) The method of claim 28 wherein alleviating the fault in the second communications session without human intervention comprises alleviating the fault in the second communications session without notification of the fault in the second communications session.